



Louisville Metro Air Pollution Control District
701 West Ormsby Avenue, Suite 303
Louisville, Kentucky 40203-3137



February 26, 2021

**Federally-Enforceable District-Origin Operating Permit
(FEDOOP)
Statement of Basis**

Source: D.D. Williamson & Co., Inc.
1901 Payne Street
Louisville, KY 40206

Owner: D.D. Williamson & Co., Inc.
1901 Payne Street
Louisville, KY 40206

Application Documents: See Table I-9

Administratively Complete: Nov 05, 2020

Draft Permit: January 20, 2021

Permitting Engineer: Aaron DeWitt

Permit Number: O-0808-20-F

Plant ID: 0808

SIC: 2087

NAICS: 311930

Introduction:

This permit will be issued pursuant to District Regulation 2.17- Federally Enforceable District Origin Operating Permits. Its purpose is to limit the plant wide potential emission rates from this source to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

The purpose of this permit is to renew the FEDOOP operating permit.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), particulate matter less than 2.5 microns (PM_{2.5}), and sulfur dioxide (SO₂). Jefferson County is classified as a nonattainment area for ozone (O₃).

Permit Application Type:

☐ Initial issuance

Permit Revision

☒ Permit renewal

☐ Administrative

☐ Minor

☐ Significant

Compliance Summary:

☒ Compliance certification signed

☐ Compliance schedule included

☐ Source is out of compliance

☒ Source is operating in compliance

I Source Information**1. Product Description:**

The plant makes caramel colorings for the food industry.

2. Process Description:

D.D. Williamson & Co. makes the colorings by heating sugar and water to a modest temperature (less than 310°F) and under low pressures (atmospheric to less than 60 psi). Some products require small additions of chemicals, such as aqueous ammonia. Some products are spray dried and sold as powders.

3. Site Determination:

There are no other facilities that are contiguous or adjacent to this facility.

4. Emission Unit Summary:

Emission Unit	Equipment Description
U1	Six (6) cookers for liquid caramel
U2	Spray dryer and three (3) cooling cyclones
IA1	Natural Gas Combustion

5. Fugitive Sources:

The source identified no fugitive sources of emissions.

6. Permit Revisions:

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
128-01-F	06/03/2001	11/05/2001	Initial	Initial permit issuance
O-0808-15-F	12/12/2015	01/19/2016	Renewal	Scheduled Permit Renewal; Removed equipment taken out of service; Incorporate Construction Permits 309-03-C, 317-03-C, 86-04-C and 535-08-C
O-0808-20-F	01/20/2021	02/26/2021	Renewal	Permit Renewal; Administrative corrections

7. Construction Permit History:

There have been no construction permits issued since the last permit renewal.

8. Application and Related Documents

Document Number	Date	Description
161671	08/05/2020	FEDOOP expiration reminder
176900	11/04/2020	Operating application FEDOOP renewal
176994	11/05/2020	Administratively complete letter
177407	11/11/2020	IA equipment emission question
177501	11/13/2020	D.D. Williamson response to IA equipment emission question
181163	01/04/2021	Draft permit for company review
194004	01/19/2021	Draft permit for public comment

9. Emission Summary

Pollutant (ton/yr)	CO	NO _x	SO ₂	PM ₁₀	VOC	Total HAP	Single HAP
Actual Emissions 2009	1.67	1.98	1.67	3.99	0.11	0.04	0.04
Major source trigger (based on PTE)	No	No	Yes	Yes	No	No	No

10. Applicable Requirements

- | | | |
|------------------------------------|--|------------------------------------|
| <input type="checkbox"/> 40 CFR 60 | <input checked="" type="checkbox"/> SIP | <input type="checkbox"/> 40 CFR 63 |
| <input type="checkbox"/> 40 CFR 61 | <input type="checkbox"/> District Origin | <input type="checkbox"/> Other |

11. Referenced Federal Regulations:

The source has no federal requirements.

12. Non-Applicable Regulations:

None

II Regulatory Analysis

1. Stratospheric Ozone Protection Requirements:

Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. D.D. Williamson & Co. does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

2. Basis of Regulation Applicability

a. Applicable Regulations

Regulation	Title	Basis
1.13	Control of Objectionable Odors in the Ambient Air	Applies to sources which may emit Objectionable Odors
2.17	Federally Enforceable District Origin Operating Permits	FEDDOOP
7.06	Standards of Performance for New Indirect Heat Exchangers	Applies to equipment installed after April 9, 1972, and subject to the PM, Opacity, and SO ₂ standards.
7.08	Standards of Performance for New Process Operations	Establishes the requirements for PM emission from new processes that commences construction after September 1, 1976.
7.09	Standards of Performance for New Process Gas Streams	Applies to process gas streams subject to a standard of performance for sulfur dioxide and which commenced on or after April 19, 1972.

b. Plantwide

- i. D.D. Williamson & Co. is potentially major for SO₂ and PM₁₀. Regulation 2.17 – *Federally Enforceable District Origin Operating Permits* establishes requirements to limit the plant wide potential emission rates to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements. The source requested limits of the SO₂ and PM₁₀ less than 25 tons per year to be classified as a synthetic minor (FEDDOOP) source.
- ii. Regulations 5.00 5.20, 5.21, and 5.23 (STAR Program) establish requirements for environmental acceptability of toxic air

contaminants (TACs) and the requirement to comply with all applicable emission standards. D.D. Williamson & Co. has requested emission limits of less than 25 tons per year for all criteria pollutants, less than 12.5 tons/year for total HAPs and less than 5 tons per year for each individual HAP to be considered exempt from local TAC (STAR) regulations, as defined by Regulation 5.00, section 1.13.5.

- iii. Regulation 2.17, section 5.2, requires monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the district upon request.
- iv. Regulation 2.17, section 7.2, requires stationary sources for which a FEDOOP is issued to submit an Annual Compliance Certification by April 15, of the following calendar year. In addition, as required by Regulation 2.17, section 5.2, the source shall submit regular reports to show compliance with the permit, by March 1 of the following calendar year. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.17.

c. Emission Unit U1 – Caramel Coloring

EP	Description	Applicable Regulations
E1	Cooker #1 for liquid caramel coloring	1.13, 7.09
E2	Cooker #2 for liquid caramel coloring	
E3	Cooker #3 for liquid caramel coloring with blowout tank	
E4	Cooker #4 for liquid caramel coloring with blowout tank	
E5	Caramel coloring cooker with a flash tank and vacuum jet	

Control ID	Description	Efficiency
C1	Venturi type wet scrubber	81.3% for SO ₂ ¹

¹ On June 14 and 15, 2016, the source performed an EPA Reference Method 6 stack test on the venturi scrubber for SO₂ removal efficiency. The average SO₂ inlet emission rate was 1.52 lb/hr. The average SO₂ outlet emission rate was 0.23 lb/hr. This results in a control efficiency of 81.3% for SO₂.

i. Standards

(1) Odor

Per Regulation 1.13, section 2.1, no person shall emit or cause to be emitted into the ambient air any substance that creates an objectionable odor beyond the person's property line.

(2) SO₂

Per Regulation 7.09, section 4, the source shall not cause or allow at an affected facility the release of a process gas stream containing sulfur dioxide with a concentration greater than 0.2863 grains/dscf at 0% excess oxygen unless the resulting emission of sulfur dioxide is less than 40 tons a year and a modeling demonstration in accordance with Regulation 2.11 is made showing attainment and maintenance of the NAAQS for sulfur dioxide. The STAR exemption limit of 25 tons will ensure compliance with the 40 tons Regulation 7.09 limit.

d. Emission Unit U2 – Spray Drying

EP	Description	Applicable Regulations
E6	Spray Dryer and three cooling cyclones	7.08

Control ID	Description	Efficiency
C2	Wet Scrubber/De-mister	80% for PM ²

i. Standards

(1) Opacity

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

(2) PM/PM₁₀

The PM emission standards are calculated per section 3.1.2 and 3.2. The equation to calculate the hourly PM emission limit $E = 3.59 \cdot P^{0.62}$, where E is the allowable lb/hr PM

² On June 15, 2016, the source performed an EPA Method 5 stack test on the wet scrubber outlet for a PM emission rate. The average PM outlet emissions were 1.49 lb/hr. The average PM inlet emissions were not tested. Assuming the District's pre-approved control efficiency for scrubbers of 80%, the PM inlet emissions are calculated to be 7.45 lb/hr.

emission limit and P is the process weight rate expressed in tons/hr.

e. Emission Unit IA1 – Natural Gas Combustion

EP	Description	Applicable Regulations
IA1	Natural gas Boiler 1	7.06
IA2	Natural gas Boiler 2	

i. Standards

(1) Opacity

Regulation 7.06, section 4.2 establishes opacity standards for Boilers 1 and 2.

(2) PM/PM₁₀

(a) Boilers 1 is subject to Regulation 7.06. In accordance with Regulation 7.06, Section 4, the emission standard for PM is 0.56 lb/MMBtu/hr for the boiler.

(b) Boiler 2 is subject to Regulation 7.06. In accordance with Regulation 7.06, Section 4, the emission standard for PM is 0.52 lb/MMBtu/hr for the boiler.

(3) SO₂

Boilers 1 and 2 are subject to Regulation 7.06. In accordance with Regulation 7.06, Section 5, the emission standard for SO₂ is 1.0 lb/MMBtu/hr for each boiler.

III Other Requirements

1. Temporary Sources:

The source did not request to operate any temporary facilities.

2. Short Term Activities:

The source did not report any short term activities.

3. Emissions Trading:

The source is not subject to emission trading.

4. Alternative Operating Scenarios:

The source did not request any alternative operating scenarios.

5. Compliance History:

Date	Regulation Violated	Settlement
06/05/2002	Reg. 2.17, section 3	Failure to Comply with FEDOOP Permit. Agreement \$1,500
12/16/2003	Reg. 1.13, section 2	Failure to Control Objectionable Odors. Agreement \$375
11/02/2005	Reg. 2.03, section 5	Failure to Comply with District Permit. Agreement \$1,500
03/02/2006	Reg. 1.13, section 2	Failure to Control Objectionable Odors. Agreement \$750
06/27/2006	Reg. 1.14, section 2	Visible Fugitive Emissions Beyond the Property. Agreement \$750
10/06/2009	Reg. 5.15, section 68	Failure to Comply with Requirements of Program. US Court \$300,000
03/14/2006	Reg. 2.03, section 5	Permit Conditions – Not in Accordance with Application. Agreement \$375
06/30/2006	Reg. 2.17, section 3	Failure to Comply with FEDOOP Permit. Agreement \$1,500
01/13/2014	Reg. 1.13, section 2	Failure to Control Objectionable Odors. Agreement \$750

6. Calculation Methodology or Other Approved Method:EU U1, Caramel Production Operation:

$\text{NH}_3 \text{ tpy} = (\text{Throughput of Ammonia Bisulfite (ABS) lb/yr}) \times (\% \text{ remains in product}) \times (\% \text{ NH}_3 \text{ in ABS}) / (2000 \text{ lb/ton}) \times (1 - \text{scrubber efficiency}) \times (\% \text{ consumed in reactions})$

$\text{SO}_2 \text{ tpy} = (\text{Throughput lb ABS/yr}) \times (\% \text{ remains in product}) \times (\% \text{ SO}_2 \text{ in ABS}) / (2000 \text{ lb/ton}) \times (1 - \text{scrubber efficiency}) \times (\% \text{ ABS consumed in reactions})$

$\text{Ammonia Hydroxide tpy} = (\text{Throughput lb NH}_4\text{OH/yr}) \times (\% \text{ ammonia}) \times (1 - \text{scrubber efficiency}) / (2000 \text{ lb/ton}) \times (\% \text{ consumed in reactions})$

EU U2, Powder Production:

$\text{TSP tpy} = (\text{Throughput lb/yr}) \times (0.10 \text{ load factor}) \times (1 - \text{cyclone efficiency}) \times (1 - \text{wet scrubber efficiency}) / (2000 \text{ lb/ton})$

EU IA1, Natural Gas Combustion

Natural Gas Combustion from AP-42, Chapter 1.4, Tables 1.4-1 through 1.4-4

$$\text{Emissions (tons/yr)} = \text{Usage (MMSCF/yr)} \times (\text{Emission Factor}) / 2000 \text{ (lb/ton)}$$

7. Insignificant Activities

Equipment	Qty	PTE (ton/yr)	Regulation Basis
Pressure relief valves from cookers to holding tank	4	< 2 tpy SO ₂	Regulation 1.02, Appendix A
Lab exhaust fan from chemical hood	1	< 2 tpy SO ₂	Regulation 1.02, Appendix A
Portable welding torches	2	< 2 tpy PM	Regulation 1.02, Appendix A
Fork lifts, propane powered fork lifts	3	< 5 tpy NO _x	Regulation 1.02, Appendix A
Small dust collector that removed dust from headspace of 200-gallon tank	1	< 1 tpy PM	Regulation 1.02, Appendix A

1. Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.
2. Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements.
3. The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15th.
4. Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
5. The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions, or use Potential to Emit (PTE) as the annual emissions for each piece of equipment.
6. The District has determined that no monitoring, recordkeeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.